With compliments of
John O'Reilly

HINTS ON THE TREATMENT

OF

STRANGULATED HERNIA.

THE PROPERTIES OF OPIUM AS ANTIPHLOGISTIC,

ANATOMICALLY AND PHYSIOLOGICALLY EXPLAINED,

BY

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STRANGULATED HERNIA.

Life is short and the art long, the occasion fleeting, experience fallacious, and judgment difficult. The physician must not only be prepared to do what is right, but also to make the patient, the attendants, and externals coöperate. (*Aphorisms. Sec. L. Adam's translation of Hippocrates.*)

What is the first preliminary and most imperative duty of a physician or surgeon when called on to visit a person whom he finds suffering from oppression about the diaphragm, accompanied by tormina, constipation of the bowels, and vomiting? To make a searching and close examination, with a view of ascertaining if a hernia presents itself at any part, without paying any attention to trifling objections made by the patient on the score of delicacy, a circumstance that sometimes happens when the case is that of a female.

In the event of ascertaining the existence of a hernia, what course should be adopted? The patient should be placed in the most suitable position with a view to its immediate reduction by the taxis. Having failed to reduce the hernia by the process just indicated, what should be the next expedient to have recourse to, to relieve the difficulty? The patient should be placed in a warm bath (the temperature of the bath should be raised to the highest degree the patient can bear, by the addition of hot water at intervals. Circumspection being had with regard to the patient's constitution as well as provision made for his restoration. Sir A. Cooper's remarks should not be forgotten) and kept there until fainting takes place, and then, whilst in this condition, the taxis should be again tried.

In the event of being foiled in the attempt to reduce the hernia, whilst the patient is thus in a state of suspended animation in the bath, what should be next done? Two competent su geons should be immediately summoned to attend, the necessary prepa-

ration for the operation required to reduce the hernia made, and on the arrival of the assistants the patient should be put under the influence of chloroform, cautiously and slowly; when reduction by the taxis is again to be attempted. In case of failure at this juncture, what should be done? No further time should be lost, but the usual operation proceeded with *instanter* and the hernia replaced.

Having accomplished this, and carried the patient to bed, what next should be done? The patient should get an anodyne draught and be directed, when he complains of thirst, to take pieces of ice in his mouth to quench it. Should the patient be kept under the influence of opium? Yes, he should be kept under the influence of opium for about four or five days. Should the patient get much food? No, he should only get arrow-root or some bland substance for a few days. Should a purgative draught be given immediately, or in some hours after the operation, to produce the evacuation of the bowels? Certainly not, inasmuch as it would cause disturbance of the alimentary canal, and thus be the means of causing inflammation of the peritoneum. How soon should the wound be dressed after the operation? About the fourth day, to afford the wound a fair chance of healing by the first intention. What is the best rule to adopt in operating? To divide the integuments freely, so as to give ample room, as well as the various coverings of the sac, down to the seat of the stricture. Should the sac be opened? Great authorities, amongst whom may be mentioned Sir Astley Cooper, advise division of the stricture without opening the sac. Sir A. Cooper, apprehensive of weakening the abdominal parietes, and thus giving a tendency to hernia and inflammation, advises the hernial sac not to be opened if possible; and further enjoins, in the event of the hernial sac being opened, that the incision should be small, one inch in extent, and at a distance of an inch from the abdominal ring. He says "it is best to divide the stricture by passing the knife between the ring and the sac, as a larger portion of peritoneum is thus left uncut, and the cavity of the abdomen is afterwards more easily closed." It is right to remark that Sir A. Cooper, in a case of a small hernia, where fear is entertained that the intestine is in a state of gangrene, advises the sac to be opened. Sir Astley's views are corroborated by the investigations of Scarpa, relative to the strength and elasticity of the peritoneum, but I think the position assumed by Sir A. Cooper can be easily overthrown. When a small wound is made into the peritoneum it usually follows that the wound is rendered larger or lacerated during the reduction of the contents of the hernial sac. It is a well established principle that a simple incised wound will unite easily, whereas the reverse is the description of a lacerated wound. Therefore it is better to make a large wound at once than a small one, which is liable to be complicated with laceration. Again, it is to be remembered that a simple incised wound of the perito-

neum will unite as readily as a simple incised wound in any other place, and thus render the divided part as firm as it was originally, provided the sac is returned.

When much manipulation is necessary to return the hernia after the stricture has been divided external to the neck of the sac, it would be better to open the sac, introduce the finger (recollecting the remarks of Scarpa and Lawrence) as far as the neck of the sac, and be certain no stricture existed there, and thus preclude the possibility of returning the hernia into the abdomen in a strictured condition. Another reason for opening the sac, in addition to the one just mentioned, is, that as great danger is to be apprehended from contusing the external surface of the peritoneum by the fingers as making an incision into it, on the principle that contused wounds are more apt to be attacked with inflammation than simple incised wounds.

What is the greatest danger to be avoided, having arrived at and ascertained the seat of the stricture? The usual answer to this question is, wounding the intestine or the epigastric artery, in case of inguinal hernia, or the obturator artery when it takes an irregular origin in femoral hernia; but in my opinion the greatest danger is the calling on or permitting the assistants severally to examine the stricture, whereby the operation is delayed, and the delicate soft parts are contused and in some cases perhaps lacerated; such accidents have occurred, thus rendering an operation which might otherwise prove successful, a fatal one. What objection could be made to leaving the patient for twelve or twenty-four hours without performing the operation? The almost certain supervention of inflammation (if the hernia is acute) within that period, and the almost equal certainty of the death of the patient after the operation in the event of such being had recourse to. Is it the solemn duty of the surgeon, therefore, to remain with the patient until he accomplishes the reduction of the hernia by taxis or operation? Most unquestionably, the surgeon should not leave the patient until he has done so, or until he has given up the charge of him to a person who is willing to take the proper steps for the patient's safety by operating immediately. What objection could be made to delay the operation which is universally deemed to be dangerous with a view of giving the patient the benefit of other remedies, as for instance, blood-letting, tobacco, cold applications, O'Beirne's tube, and warm applications? It would be unnecessarily losing time, and placing the patient's life in danger, to try any remedies of the kind after the failure to reduce the hernia by the taxis, when the patient is in a state of suspended animation in the bath.

What are the proofs to sustain this declaration? When a man faints in a bath, animation is temporarily suspended, total relaxation of the muscles is the sequence, the muscular fibres lose their force of contraction and can offer no opposition, the patient in

truth is dead to all external agents, and can offer no more resistance to the efforts made to reduce the hernia than a dead man. On sound physiological principles, therefore, it is clear that the warm bath has reduced the muscular system to a state of complete relaxation, and has totally deprived it of all its physical force. The patient is then placed in the most favorable condition for the reduction of the hernia, and very often the surgeon is gratified with the pistol-like shot elicited by the return of the hernia into the abdomen. Before adverting to the other remedies enumerated in the treatment of strangulated hernia, it is necessary to inquire—What is the definition of strangulated hernia? Mr. Porter, late Professor of Surgery in the Royal College of Surgeons in Ireland, says, "The last and most fearful condition of a rupture is its state of strangulation in which the protruded viscus, no longer capable of being returned to its former situation within the abdomen, no longer fit for the performance of its functions, is banded and bound down to its neck in such wise as to interrupt and impair the circulation through it."

Bleeding has powerful advocates as well as very distinguished opponents. The *modus operandi* of bleeding can be explained on precisely the same physiological principles as the warm bath; both remedies operate exactly or nearly in the same way as regards the reduction of the hernia by the taxis; bleeding, when carried to a certain extent, is followed by suspended animation and relaxation of the muscular system, just as takes place when the patient is kept a certain time in the warm bath; therefore, with the exception of the loss of blood, which in some cases is not desirable, the remedies are nearly equally potent. In what case would bleeding appear to supersede the warm bath? In a case of acute or recent strangulated hernia in a powerfully athletic man, when not a moment should be lost in accomplishing the reduction of the hernia in order to ward off inflammation. In what particular can a surgeon commit an error after having copiously blooded a patient laboring under strangulated hernia? In having recourse to other remedies, instead of immediately performing the operation. What bad result could follow from delaying the operation? Would not the bleeding prevent inflammation and render the patient's condition secure for some time? In answering these questions, Mr. Porter's definition of strangulated hernia is to be remembered, as well as the pathological fact that parts possessed of low vitality are more apt to be attacked with mortification than those possessed of a high degree of vitality, and that thus the bleeding promotes the progress of mortification in the strictured part rather than retards it, and therefore postponing the operation after blood-letting is a most pernicious and fatal practice.

Applications of ice and freezing mixtures have been advised by Sir A. Cooper, and other eminent surgeons. Why should not the patient get a chance of his having his hernia reduced through

this instrumentality? Because if the reduction of the hernia failed whilst the patient was in the warm bath, the cold application must make his case worse, and render it utterly hopeless if persevered in. How is this to be explained? Mr. Porter says, "The protruded viscus is then in a situation precisely similar to that of a limb around which a cord has been tied with sufficient tightness to interrupt the circulation and threaten to induce mortification." As the cold causes contraction of the muscular fibres and tightens the stricture, and as the circulation is interrupted, the cold induces mortification in the protruded viscus; physiologically speaking, therefore, cold applications should not be had recourse to. Who would think of applying ice or a freezing mixture to a limb when the circulation has been arrested by the application of tourniquet? No person. But would it not be equally preposterous and deserving of censure to apply ice or a freezing mixture to a strangulated hernia when the circulation is as effectually stopped? Yes, as it would hasten mortification of the protruded viscus. When surgeons are applying ice, they should remember what Mr. Lawrence says: "the intestine may mortify not only without characteristic change in the hernial tumor, but also without appreciable alteration in the general symptoms, and we may not know what has happened until the bowel is laid bare in the operation or in examination after death."

Some surgeons place great faith in tobacco. It is quite certain notwithstanding that some of the patients subjected to its influence are reduced to a great state of exhaustion as well as others therapeutically launched into eternity, yet the muscular system is not or cannot be rendered more relaxed than by the warm bath; it therefore cannot prove of advantage after the warm bath has failed; in addition the tobacco has a depressing influence on the vital powers in case the operation for strangulated hernia is had recourse to, the patient's chances of recovery are therefore greatly diminished on this account.

The late Mr. O'Beirne placed great reliance on the introduction of a long tube into the rectum and colon, but although I have no doubt incarcerated or obstructed hernia can be reduced through the agency of the tube, yet I believe in cases of acute strangulation no benefit can be derived from its use. The difference between incarcerated and strangulated hernia must be remembered. In the one case, the circulation is completely arrested, in the other it is not; in the one case communication exists between the protruded intestine and the intestinal tube located in the abdomen, in the other total and complete occlusion describes the state of the parts; therefore, unless communication exists between the protruded viscus and intestinal tube, the introduction of the tube cannot be followed by beneficial results. The definition of incarcerated hernia given by Sir Charles Bell, is not essentially different from the explanation given by me. Sir Charles says, "the intestine is retained in

the sac by incarceration, that is in consequence of its distension, but there is no stricture of the blood-vessels of the intestine."

The advocates of the various remedies specified adduce cases which have been treated successfully by them, but it is to be remarked that occasionally cases of hernia will return when least expected, and that too when the patients are on the table and just about being operated on, so that so much importance need not be attached to the remedies alluded to, as the reduction of the hernia and the application of the remedies may be a mere coincidence. Commentaries on the other remedies I think are unnecessary, and may be altogether excluded from remark as unworthy of notice.

What property does the heat generated by the hot bath all over the body possess, which proves its agency to be superior to bleeding, chloroform, and tobacco in the restoration of strangulated hernia? All that can be accomplished by bleeding, chloroform, and tobacco, is the relaxation of the muscular fibres; the tendinous structures are not influenced by these agents, as is exemplified in femoral hernia, where the muscular fibres are not engaged in keeping up the strangulation. It is a physical law that all substances expand by heat; an iron ring for instance being heated, will allow a cylinder to pass through it with facility which could not be passed through it by any possibility when cold; on this principle it follows as a consequence that the tendinous structures which enter into the formation of the crural arch become expanded, and relax the stricture so as to permit the hernia to be reduced.

But it may be said the heat also causes the expansion of the muscular fibres of the protruded intestine, and thus balances the increase of the aperture at the seat of the stricture in the tendinous structures; but it is to be recollected the heat relaxes the muscular fibres, relieves spasms of the intestine, and in this way facilitates its passage through the expanded opening into the abdomen.

Assuming that the operation for the relief of hernia is performed before inflammation has taken place, it is the great object to prevent peritonitis with its attendant concomitants or products, viz. lymph, serum, and mortification. What therefore is the best medicine to prevent inflammation and its consequences? Most assuredly opium affords the most reliable and certain antiphlogistic. How does the opium act? It will be answered, it procures sleep or rest, and keeps the patient quiet. But it may be asked how opium induces sleep, and further, how does it prevent peritonitis, or the secretion of lymph, serum, or death of the peritoneum? Every medical man ought to be able to tell the "why and wherefore;" but up to the present time, I am not aware any one has done so. To answer these questions in a rational and scientific manner, it is important to inquire how or

what becomes of the opium on being administered? When the opium is taken into the stomach by the mouth, it passes into the intestinal tube, it is taken up by the lacteals and lymphatics, gets into the venous circulation, is carried to the right side of the heart, commingled with the venous blood, from thence to the lungs, and next to the left side of the heart, from whence it is distributed all over the body by the aorta, its branches, ramifications, and capillaries; the opium incorporated with the blood is brought in contact with the organic nerves on the internal coats of the arteries which communicate with the organic nerves of the external coats of the arteries through the branches of nerves which connect the internal and external coats; it is further communicated to the organic glands in which the capillary arteries terminate, and capillary veins commence. The opium causes the contraction of the arteries to the smallest diameter by its action on the organic nerves, as well as suspends the operation of the organic glands. Thus it will be perceived, that all the capillary arteries everywhere distributed become contracted, and that the action of the cerebral glands becomes suspended, the volatile agent secreted by these glands ceases to be secreted or to stimulate the nerve tubules of the brain, by whose action the operations of the mind are carried on, as well as the nerve tubules of the nerves, causing the arrest of sensation and motion. Thus it is the operations of the mind become suspended as indicated by sleep, and thus, too, the individual becomes insensible of pain, and incapable of locomotion, as well as, in truth, dead to all external influences. The organic glands of the peritoneum, on the principles indicated, cannot secrete lymph or serum, the capillary arteries cannot become dilated, and consequently cannot furnish arterial blood to the organic glands; therefore, as the capillary arteries are kept in a contracted state, and the organic glands placed in a quiescent condition by the narcotic influence of the opium, it follows as a consequence, that inflammation cannot ensue, or in other words, increased vascularity, known by the dilated state of the blood-vessels with the effusion of lymph or serum, cannot take place. But it will be said this explanation is Utopian, is a mere assertion, without proof, or is the product of an eccentric mind, and cannot be demonstrated; it is, therefore, important to inquire, can any proofs or ocular demonstration be given of the action of opium on the organic nervous system? Yes; ocular demonstration is afforded by the action of the opium on the pupils, they not only become contracted, but are immovably fixed; the iris, it will be remembered, is largely supplied with nerves from the lenticular ganglion, and it shows the condition of the organic nerves and glands all over the body, namely, that they are contracted and fixed.

Having given in detail the modus operandi of opium, let me conjure every man who is ignorant of the physiological process of the action of opium when administered as a therapeutic agent not to

sneer at the explanation, or under the mask of scepticism make insinuations he cannot maintain, but like a true philosopher, recollecting that arrogance is the cloak of ignorance, prepare to scrutinize the subject in all its bearings. Let him first ask himself, has any statement been made contrary to or inconsistent with facts derivable from anatomical premises? Let him next ask himself, is there any mystery or doubt about the way the opium obtains access, and becomes incorporated with the blood? Let him also ask himself, have anatomists found organic nerves in the coats of the arteries? Let him further ask himself, where the first impediment to the free course of the opium contained in the blood is to be found? Or, where does its progress appear to be intercepted? Let him ask himself, has he any doubt that the arteries terminate in capillaries, and that the veins commence in capillaries? Let him ask himself, is it true the blood loses or gives off the oxygen at the termination of the capillary arteries? Let him ask himself, is it true the blood in the capillary arteries is altogether of a different character from the blood in the capillary veins? Let him ask himself, is it possible the blood should lose its oxygen at a certain point and at once become venous, unless a gland intervenes to change the qualities of the blood? Let him further ask himself if there is a gland interposed between the capillary artery and capillary vein, has the gland the characteristic mark of other glands, namely, an excretory duct? Let him ask himself, is the pore of the skin an excretory duct connected with the gland? Let him satisfy himself further by inquiring, has the gland any other characteristic of a gland besides an excretory duct, and he will find it has the power of secretion or secerning a saline fluid from the blood, which he can observe passing through the excretory duct or pore of the skin; let him yet inquire, can he find any gland with a very slender long duct connected with it, and he will find such to be the case, when he thinks of a single hair, which is a hollow tube of the smallest dimensions, and through which the secretion from the gland passes, as is observed when a person is in a state of perspiration; let him now ask himself is it true, what anatomists have stated relative to the structure of the brain, that it is composed of tubules or hollow nerve fibres, and that the nerves are all composed of a series of nerve tubes. Let him inquire why these nerve fibres or nerve tubes should be hollow unless to receive a secretion on the same principles as the tubules or ducts of other organs or glands having various functions to perform in other parts of the body; let him ask himself can he assign any reason, why the opium as well as the oxygen should not be intercepted and communicated to the gland at the termination of the artery.

With a view of demonstrating and testing the truth that there is a gland interposed between the termination of the capillary artery and commencement of the capillary vein, and in addition that it is a secreting gland, that it is furnished with an excretory duct; let him ask himself, why the surface of a person engaged in violent

bodily exercise will become burning hot, and why he will become covered over with a profuse perspiration, exuding not only from the pores on the surface of the trunk and extremities, but likewise from the hair tubules, on drinking a copious draught of water, and continuing to exert himself. He can account for the heat of surface, when he recollects that respiration is hurried, and consequently that a greater quantity of oxygen is introduced into the blood; he remembers the physical law that heat is increased in proportion to the quantity of oxygen consumed, hence that the burning heat can be easily explained on philosophical principles. Again, he knows when the fluid imbibed by the mouth passes into the stomach and alimentary canal, that it is quickly carried by the lacteals and lymphatics into the venous circulation, next is conveyed to the right side of the heart, thence is forwarded to the lungs, next to the left side of the heart, and from the latter that it is distributed yet mixed with the blood, by the aorta, its branches, ramifications, and capillaries; all over the trunk, head, and extremities. He will now recollect that previous to the introduction of the fluid into the blood the latter contained an excess of oxygen which over-stimulated the organic glands, giving rise to the increase of heat. As it is now evident that the blood contains an excess of oxygen, and that it is also equally true that the blood has got introduced into it a new element, namely, water, and that the oxygen is given off to the organic gland as well as the water, it becomes apparent the gland in the exercise of its function of secretion must unite the excess of oxygen contained in the blood with the increased quantity of hydrogen furnished by the water. It follows therefore, as a consequence that, on the excess of oxygen uniting with the hydrogen, water or serum is rapidly formed, which is carried off by the excretory ducts or pores of the skin as well as by the hollow hair tubules on the scalp, thus establishing the fact that the water taken in by the mouth passes almost immediately out by the excretory ducts on the surface. In case he objects that the water secreted by the glands is not of the same quality as the water taken in by the mouth, inasmuch as it contains saline ingredients; he will only find an additional proof that the water must have its quality changed through the operation of a secreting gland, which not only removes the hydrogen of the water introduced into the blood with the excess of oxygen introduced in the blood, but likewise some of the saline particles of the blood; let him continue administering the water and keeping up the bodily exercise, and he will be thus afforded ocular evidence of the truth of this explanation; let him reflect, and he must arrive at the conclusion that the organic glands are possessed of a vital action to protect life when in danger of destruction by over-stimulation by oxygen; and further having admitted the fact, he must admit the broad fundamental principle that the organic glands exercise their vital action under other circumstances to throw off disease whenever they are con-

taminated by poisons communicated to them through the instrumentality of the blood, as for instance, when the matter of small-pox, obtained from a pustule of an individual suffering from this disease, is inserted by making small incisions in the skin of the arm of a person who has not been vaccinated, that the poison is carried by the lymphatics into the venous circulation, that it is conveyed mingled with the blood to the right side of the heart, next to the lungs, again to the left side of the heart, and ultimately is distributed all over the trunk, head, and extremities, by the aorta, its branches, ramifications, and capillaries, to the organic glands; that the poison contained in the blood is communicated to the organic glands, that by degrees the glands are brought under the influence of the poison, that vitality in the organic glands receives the shock of the poison and announces the fact by a rigor, showing that life is shaken at its foundation and threatened with danger; that the organic glands, true to their functions of preserving life, prepare to throw off the poison by the process of secretion. In the first instance, the glands secrete lymph, giving rise to pimples on the surface, next serum giving rise to vesicles, next pus giving rise to pustules, precisely of the same character as the pustule from which the poison was obtained. Let him recollect further that vitality located in the organic glands is able in many instances to eliminate the poison, in the manner indicated, after a certain number of days, unassisted by artificial aid.

In case he still entertains a doubt about the mode of operation of opium, let him test the matter by direct experiment. Let him administer to an epileptic patient nitrate of silver for a certain time, taking care that the surface of the body is exposed to the light, and he will find that the silver which has been absorbed by the lacteals and lymphatics in the intestinal canal, and next conveyed into the venous circulation, as well as subsequently into the arterial circulation, is given off or deposited in the organic glands, where its presence is recognised in the shape of the oxyde of silver giving a peculiar color to the skin. If he thinks the explanation only holds good with reference to the external parts of the body, let him feed a pig on madder for some time, and he will find the bones on examination to be dyed of the same color as that of the madder.

Does he yet require to be convinced of the opium taking the course I have described, then let him contemplate an obstruction in the ductus communis choledochus, and reflect on what occurs; he will perceive that the venous blood must soon become surcharged with bile, that the blood in this condition is carried to the right side of the heart, from thence to the lungs, and from the latter to the left side of the heart, from whence it is distributed all over the body by the aorta, its branches, ramifications, and capillaries, and communicated with the oxygen to all the organic glands in the animal economy, a fact proved beyond dispute by the coloring matter of the bile being communicated to them. If he yet hesitates to believe, let him examine the shirt of the individual, and he

will find it tinged with yellow, the coloring matter having passed through the excretory ducts of the glands (the pores of the skin) to the surface.

In case he doubts if the opium obtains entrance into the blood in the way pointed out, and is given off to the organic glands in the manner stated, let him test the urine of a person who has been taking iodine for a few days, and he will find on mixing the urine with starch, the color will be changed to a violet color, showing the presence of iodine in the urine, he must now perceive that it is a clear case that the iodine which has obtained entrance by the lacteals and lymphatics into the venous blood and which has passed to the right side of the heart, and from thence to the lungs, and from the latter to the left side of the heart, from whence it is distributed, still incorporated with the blood, by the aorta, its branches, ramifications, and capillaries, to the head, trunk, and extremities, that on arriving at the malpighian bodies composed of the organic glands of the kidneys, it passes through them during the process of the secretion of urine. It is an indisputable fact, that the iodine taken by the mouth passes out by the excretory ducts of the kidneys. It is an unquestionable truth, that the urine is secreted from the blood by the organic glands or what are called the malpighian bodies, as the iodine contained in blood is found in the urine, it therefore becomes an incontrovertible fact that the iodine must be brought in contact with the organic glands of the kidneys. Let him protest against the truth of this doctrine as much as he pleases, yet he cannot deny that the iodine contained in the blood is found in the urine. Let him controvert the anatomical premises as much as he thinks proper, yet he cannot gainsay the fact that the iodine passes through the same organization which has the function of secreting the urine from the blood; such being the case, he cannot controvert the fact that the secreting organization of the kidneys is truly brought under the influence of the iodine, but rather must admit the truth that it is; he can now explain why iodide of potassium is given in albuminuria, namely, to change the action or counteract the action of the poison contained in the blood on the organic glands of the kidneys; he can also explain the utility of giving iodide of potassium in secondary syphilis (particularly that form called Rupia), when he recollects that the iodine is not only brought to operate on the organic glands of the kidneys, but necessarily on all the organic glands all over the trunk, head, and extremities, and consequently on all the organic glands in the various parts of the trunk, head, and extremities, which have been contaminated with the syphilitic poison, through the instrumentality of the lymphatics carrying the poison from a chancre on the penis into the venous circulation, thence to the right side of the heart, next to the lungs, afterwards to the left side of the heart, from whence it is distributed, incorporated with the arterial blood, all over the trunk, head, and extremities, by the aorta, its branches, ramifica-

tions, and capillaries, when it is given off to the organic glands with the oxygen, thus propagating to them the identical poison derived from the chancre, and followed by the same phenomena as observed after the application of the poison to the penis. The iodine neutralizes the poison, and causes the organic glands to assume a healthy action, as evidenced by the curative process which ensues. It must be evident to every person that the poison which surreptitiously gains access through the instrumentality of the penis into the animal system, as just explained, can be pursued to its destination, eradicated and dislodged, by an exterminating agent taking another road, namely, the mouth, stomach, intestinal canal, lacteals, lymphatics, venous and arterial circulation, to its hiding-place in the organic glands—no matter how far distant. Thus demonstrating that Providence supplies the remedies for the removal of the evils that "flesh is heir to" when properly and wisely administered.

Does he yet require to be convinced that the opium acts in the manner stated, then let him ask himself how acetate of lead arrests hæmorrhage in a case of flooding, or in a case of hæmorrhage from the lungs. He knows the fact, that when he administers the acetate of lead by the mouth, and is certain it has passed down to the stomach and intestinal tube, that in some time afterwards the bleeding ceases; now let him recollect the acetate of lead is an astringent, that it causes contraction of the blood-vessels, and he will soon arrive at the mode in which the lead checks the flow of blood. He knows the lead is absorbed by the lacteals and lymphatics, that it is carried by these vessels into the venous circulation, that the venous blood is carried to the right side of the heart, and goes from this organ to the lungs, that the blood passes to the left side of the heart, that the lead is incorporated with the blood, and that it must be carried all over the body, head, and extremities by the aorta, its branches, ramifications, and capillaries, that the lead must be brought in contact with the organic nerves, or the internal coats of the arteries which communicate with the nerves on the external coats of the arteries through the connexion of the nervous branches which connect the internal and external coats. He now perceives that on the lead reaching the capillaries, it contracts them by its astringent properties to such a small diameter so as to preclude the entrance of blood into them to any considerable extent, as well as that it must act as an astringent on the organization of the organic glands themselves, and consequently arrest their secretion, a fact that is well illustrated and demonstrated in a case of epistaxis, where there is no abrasion of the pituitary membrane, or in case of menorrhagia where there is no abrasion of the mucous membrane lining the interior of the uterus.

Assuming that he is satisfied the lead arrests the secretion of the organic glands, and causes contraction of the capillary

arteries, he may require to be satisfied that the capillary arteries may be dilated, and the secretion of the glands increased by other agents; let him therefore give one or two tumblers of hot brandy punch to a light-hearted Irishman, and witness what soon occurs after the brandy he imbibes by the mouth gets into the stomach and intestinal canal, and by the lacteals and lymphatics into the venous circulation, again ascending to the right side of the heart, passing to the lungs, and again returning to the left side of the heart, from whence it is distributed all over the trunk, head, and extremities by the aorta, its branches, ramifications, and capillaries, to the organic glands, he can satisfy himself by placing the finger on the carotid or radial artery that the brandy contained in the blood has stimulated the organic nerves on the external, middle, and internal coats of the artery, by the strong pulsation and fulness of the artery. By looking at the face he will perceive it has dilated the capillary arteries, and that arterial blood now passes into vessels which before only contained a colorless fluid. Let him examine the eyes and he will observe that they are sparkling and brilliant, indicating that the cerebral glands are secreting the volatile or phosphoric agent in excess, which passing through the nerve tubules of the retina, illuminates the interior of the globes of the eyes, attended with a dazzling effect, causing the man to see two objects, where one only exists; let him further observe that his imagination is excited as well as that his ideas crowd on him, as evidenced by the volubility and confusion of his speech, let him note the moisture on his forehead, and halitus from his hair, and he cannot fail to appreciate the fact that whereas the opium caused the non-secretion of the volatile or phosphoric agent by the cerebral glands, the brandy produces the opposite condition and increases the secretion of the cerebral glands, a fact that he is afforded an ocular demonstration of, as already pointed out. I could go on multiplying examples, but it is not necessary to do so, or digress further.

It would be egotism to refer to my investigations relative to the organic nervous system, but I hope the time is not far distant when the profession, whose proverbial philanthropy, untiring industry, and vast learning cannot be questioned, shaking off the shackles of prejudice, unbiased by preconceived opinions and unobscured by obstinate comprehension, will awake up to the importance of studying the functions of the organic nervous system, and cease to turn into ridicule or stultify the results of investigations, which if they fail to possess a knowledge of, must make them appear ignorant in the estimation of other learned professions, as well as incapable of honestly and scientifically discharging their duties to mankind.

I cannot help remarking with a view of illustrating the great importance of thoroughly understanding the operation of opium on the organic nervous system, the fact that in wounds entering the peritoneum, the pleura, the pericardium, the arachnoid membrane, the anterior chamber of the eye, the synovial membranes

of joints, the intestines, opium affords the sheet anchor (when judiciously administered) to ward off and anticipate the progress of inflammation and its consequences in the manner detailed. It may be objected that when the intestines are wounded, a certain amount of lymph would be necessary to promote adhesion of the lips of the wound, but this theory is a fallacy; no lymph is necessary for the purpose, as the late Mr. MacCartney has shown many years ago, and as every surgeon who performs plastic operations is conversant with; the organic nerves of the cut surface inosculate and restore the continuity of surface of the divided parts. It may be objected that in a wound of the anterior chamber, iritis is to be apprehended and guarded against, and that as opium contracts the pupil, it would be improper to give opium, which would be certain to contract it, but the objection is more apparent than real. If the effusion of lymph is prevented by the opium, the contraction of the pupil can do no harm, as no adhesion can take place without it.

Having stated that a purgative should not be administered immediately after the operation, notwithstanding such practice is sanctioned by the highest surgical authorities known to the profession, as for instance, Sir A. Cooper and Mr. Lawrence, it is proper to remark that the patient generally has an evacuation from the bowels in a few hours after the operation, and that the opium, after a certain interval, will act as a laxative. In case the bowels are confined after the fifth or sixth day, a mild purgative or an enema may be administered, as irritation and tendency to inflammation by this time would not be apprehended.

Surgeons of the past and present generation generally advise the administration of purgatives after the operation for hernia. Mr. Lawrence says: "More commonly it is necessary to solicit the action of the intestinal canal by aperients and injections. If therefore the bowels should not have been relieved in three or four hours, a few grains of calomel may be given in a pill, or two pills may be administered consisting of calomel and compound extract of colocynth in equal parts. The sulphate of magnesia may be given afterwards, in the dose of two drachms, or one drachm in the infusion of roses, or in a mixture of mint-water and common water, and this should be repeated every three or four hours until the bowels are freely relieved. If this desirable result should not occur after the second dose, a large common injection with the addition of four or six ounces of infusion of senna or an ounce of castor-oil." Dupuytren opposed the administration of purgatives as tending to produce peritonitis. The observations of Drs. Graves and Stokes corroborate his views in the Dublin Hospital Reports. To these gentlemen belong the credit of being the first to point out the efficacy of opium in arresting and preventing peritonitis. A purgative at an early date, as already specified, by causing an increase of blood in the

capillaries which supply the intestinal tube as well as increasing the peristaltic action of the latter, would tend to inflammation of the peritoneum, and be productive of mischief.

What circumstances tend in a very great degree to render the operation for strangulated hernia unsuccessful? Hesitation, want of decision, and procrastination in the performance of the necessary operation. What other circumstance is calculated to cause the operation to be followed by a fatal termination? Persistent attempts to reduce the hernia by manipulation or the taxis, whereby the soft parts are injured, and thus placed in a predicament to be attacked by inflammation. When medical practitioners declare they have spent hours in endeavoring to reduce a hernia, having placed the patient in various positions, by the taxis, they appear to forget the practical and significant remark of Desault: "Think favorably of hernia which has not been handled before the operation."

Why is it necessary to make free incisions in operating for hernia? To guard against undue pressure and contusion in returning the hernia, which must be the case if sufficient room is not made to return the protruded contents of the hernia with ease. Is there not greater danger from making a large wound in the peritoneum than a small one? Mr. Lawrence seems to think so; he says—"If we cannot accomplish our object in this manner, a small aperture may be made in the sac near the ring, which will enable the surgeon to introduce a curved director under the stricture." Experience, however, demonstrates there is as great danger from a small or punctured wound into a serous membrane as a very large one; the truth of this statement I believe was first shown by Sir P. Crampton in the Dublin Hospital Reports in a paper on excision of the knee-joint. It is further shown by the large wounds made in operating for the removal of ovarian tumors, as well as by large wounds which lay open the cavity of the peritoneum, inflicted by the hands of an assailant or some accidental cause, which are followed by less constitutional disturbance than small punctured wounds entering the cavity of the peritoneum, just on the same principle that a punctured wound into a large joint is followed by greater constitutional disturbance than a large one that lays the cavity of the joint freely open, as is constantly witnessed in the excision of large joints; so in like manner in operating for hernia, a very small wound in the peritoneum is just as apt, if not more so, to be followed by inflammation as a free incision.

What is the utility of giving the patient ice instead of copious draughts of cold water? The ice allays thirst, the quantity of fluid which gets into the stomach is smaller, and the cold acts on the organic nervous tissues all over the body, causing contraction of the capillary arteries, and thus assisting the opium in preventing an enlarged condition of the vessels as well as the effusion of lymph and serum consequent on the former. What is

the reason bland food should be given in small quantities to the patient? Because it is easily digested, affords sustenance to the patient, and does not increase to any injurious extent the peristaltic action of the intestinal tube.

Do not, occasionally, cases of hernia present themselves of an embarrassing character, and perplex the surgeon in making a correct diagnosis? It sometimes happens that a patient will be attacked with vomiting, tormina, and constipation of the bowels, and on making an examination, very little evidence is afforded of the existence of a hernia; tenderness on pressure at a certain point being in fact the only indication of the presence of hernia. In a case like this, what should be done? Most undoubtedly it would be the duty of the surgeon to give the patient the benefit of a doubt in case such existed, and at once proceed to operate in the same way as if he was certain it was a true case of strangulated hernia. I know a case, where a person after riding on horseback, on a very wet day, when he was drenched with rain, was attacked with a severe rigor, followed by vomiting with great abdominal distress, and who at the same time complained of a severe pain in the left inguinal region, which was found hard and painful near the site of the internal inguinal ring, and which baffled some able surgeons to tell what really was the matter; in truth, they could not say whether it was a hernia or not. The patient for about three weeks experienced the most excruciating pain until, in fact, obscure evidence of suppuration having taken place presented itself; a very cautious incision was then made over the swelling, and the soft parts divided carefully down to the fascia, which on being divided gave vent to a considerable quantity of pus to the great relief of the patient, who afterwards made a good recovery. Such a case as this might be easily mistaken for a hernia, particularly in a female; and the question arises, would any disadvantage occur to the patient in case it was mistaken for such, and that the operation for the relief of hernia was instituted? Certainly not; the patient would have been saved three weeks of the most aggravated suffering. The fascia, on being divided, would be followed by immediate relief, and the amelioration of the patient's condition as far as regards the pain and constitutional disturbance, would follow the division of the fascia. Therefore, in a case of doubt, the patient should be operated on precisely on the same principles as those put forward.

When a hernia is allowed to remain unreduced for four or five days, what can be more trying to the feelings of a competent surgeon when called in consultation than to find the integuments over the seat of the hernia of a dark-red color and a distinct crepitus on pressing the emphysematous tumor that corresponds with the location of the discolored integuments. I have seen such cases. He is chagrined and mortified (as remarked by Mr. Hey) to think that the operation has been

too long delayed; that the operation affords but the slightest chance of success; and further that in the event of the patient surviving, the most loathsome evil that could be imposed on mankind is likely to harass the patient, namely, an artificial anus. (It must be confessed that a patient should be deemed fortunate in a case where an artificial anus closes and the fæces are discharged "per vias naturales.") Cases similar to the one just depicted, present themselves to every operating surgeon; and it is to be sincerely hoped, for the reputation of general practitioners, the well-being of the public, and the character of operative surgery, that such cases will cease to occur. It is quite possible that a mistake would be made in diagnosing a case of strangulated hernia, and therefore no person should be unjustly censured when such an event takes place; but when a case of strangulated hernia presents itself to a medical man who is satisfied of its existence, who temporizes in vain, having recourse to every known expedient, not wishing through personal motives to call in the assistance of another practitioner, apprehensive that he might injure his reputation by either reducing the hernia or recommending and performing the necessary one for the reduction of the hernia, until gangrene has taken place, deserves the severest reprimand that can be given, and must always suffer from the pangs inflicted by his own conscience: such a person, indeed, is not fit to have the lives of the public intrusted to him, and he should seek some employment suitable to his condition.

After the great works of Pott, Hey, Sir Astley Cooper, Scarpa, Lawrence, Porter, Colles, Dusselbach, and Langenbeck, it may be supposed that nothing new can be advanced in reference to hernia. The surgical anatomy of hernia is complete, the pathology of hernia is equally complete; in fact, it is clear that everything is fully known about hernia, except the most important thing of all, and which appears to be only known to the fewest number of surgeons, namely, the successful mode of dealing with a case of strangulated hernia when it presents itself for relief. It is a well known fact, it must be admitted by all, that some of the very best anatomists, some of the ablest surgeons, some of the most dexterous operators, have had very great ill-fortune in regard to operating for strangulated hernia, whereby such unfortunate results have ensued as can now be understood. In making the foregoing remarks, let me not be understood as an enthusiast or theorist; I am fortified by observation and actual practice; I could cite numerous cases in support of my views. I have seen cases where all the remedies extolled by surgical authorities have been tried in vain, and where eventually the patients on being subjected to the operation have died shortly afterwards.

Acting on the principles inculcated, I saved the lives of four patients on whom I operated for strangulated hernia, the only cases I operated on; I witnessed the recovery of two other cases when the same rules of practice were adopted, and in which I

was the chief assistant to the operators, so that these six cases afford the strongest proof that the theory and practice advanced by me are correct, as will be observed by a summary of the cases in another place. It may be supposed that I possess some dexterity in performing the operation. I beg to state most distinctly I do not, and that I attribute my success to the admonishing inspiration communicated in the motto, emblazoned on the escutcheon of my name, that the greatest dangers may be encountered as well as most formidable obstacles surmounted in the performance of a grave surgical operation, when the watchword is "*Fortitudine et Prudentia*," in other words, to possessing the courage to at once undertake an operation with the conscientious belief that it is for the safety of the patient's life, without fear or trepidation, and not imprudently put off doing so, until it would be utterly useless to save the patient's life.

It may not be amiss to state that whenever I was called to visit a patient laboring under strangulated hernia, and when I found palpable evidence of inflammation having taken place, I have invariably advised the patient to be sent forthwith to the nearest hospital, having very little faith in the feasibility, or confidence in the success of an operation at such a juncture. I am satisfied that no greater or more practical advantage could be conferred on the rising generation of surgeons by any person than that of obtaining the fullest condemnation by the surgical profession of the various remedies put forward for the treatment of strangulated hernia in elementary works on surgery, as well as in the lectures delivered by the professors of surgery in the medical schools. Young surgeons are apt to follow the precepts of their masters in all the details, and will thus let slip sometimes the favorable opportunity for saving the patient's life by a timely operation. No better advice, no sounder doctrine has ever been given by any one either before or since his time, than the celebrated Mr. Hey of Leeds; his views cannot be too forcibly impressed or too firmly fixed on the mind. Mr. Hey says: "I can scarcely press in too strong terms, the necessity of an early recourse to the operation as the most effective method of preserving life in this dangerous disease. If Mr. Potts' opinion be true that the operation, when performed in a proper manner, and in due time, does not prove the cause of death oftener than perhaps once in fifty times, it would undoubtedly preserve the lives of many to perform it almost as soon as the disease commenced without increasing the danger by spending much time in the use of means which cannot be depended upon for a cure." Mr. Hey again says: "I have now, at the time of writing this, performed the operation thirty-five times, and often had occasion to lament that I performed it too late, but never that I performed it too soon. There are some cases so urgent that it is not advisable to lose any time in the trial of means to produce a reduction. The delay of a few hours may cut off all hopes of success,

when a speedy operation might have saved the life of the patient."

It is unnecessary to attempt to sustain the doctrine promulgated by Mr. Hey, nearly one hundred years ago; suffice it to say, I have profited by his advice; I am certain all surgeons who have followed it will make a similar acknowledgment.

In the last case I operated on, the patient was sixty-two years old, and suffering from chronic phthisis, the hernia (femoral) became strangulated at twelve o'clock M.; I operated about seven o'clock P.M.; the wound healed by the first intention, the patient had no bad symptoms, and made a most favorable recovery. Notwithstanding the complication caused by the difficulty in the lungs, chloroform was administered without any bad effects, it was inhaled slowly, and administered with extreme caution. I should also state in reference to the case, that the patient was kept under the influence of opium for five days, got ice to quench his thirst, and very small quantities of arrow-root for the first few days.

In another case where a patient labored under strangulated inguinal hernia, produced at two o'clock P.M. by over-exertion in rowing a boat, and when the usual remedies had been tried by the medical attendant, I operated at eight o'clock P.M.; the after treatment was such as already stated, and the patient recovered without any trouble.

In another case, where a woman, three months pregnant, was attacked with strangulated femoral hernia, I operated the same evening at nine o'clock P.M.; the patient recovered without any difficulty. In a fourth case, a man was attacked with strangulated inguinal hernia, late in the evening; I operated at ten o'clock A.M., the next morning; the patient had a most favorable recovery. In two cases, one of femoral hernia, the other of inguinal hernia [where I acted as chief assistant], the disease in both cases had not existed more than fifteen hours until the operation was performed; both patients recovered without an untoward symptom. Since writing this article, I have to add another case; I was called in consultation on the 17th of last November, to visit Mr. Charles F——, aged fifty, who had worn a truss for inguinal hernia on the left side for the last eight or nine years, and which became strangulated at eight o'clock, the evening before, in consequence of his having removed the truss in the course of the day; as soon as the strangulation had taken place, the patient had himself placed in a warm bath and remained there for some hours. The next morning he was visited by his medical attendant, who had recourse to the taxis, but without effect, and who next directed him to take tartar emetic solution so as to keep up nausea, and, at the same time, ordered the local application of ice to the hernial tumor. At two o'clock P.M., I examined the patient and found the hernial tumor tense, and extending from the external ring to the lower part of the scrotum on the left side. Having placed the patient cautiously

and slowly under the influence of chloroform, I endeavored to reduce the hernia by the taxis. The medical attendant having also endeavored to reduce the hernia whilst the patient was in this condition, and having failed to do so, I proceeded at once to perform the operation. On division of the integuments and fascia, I exposed what appeared to be the hernial sac, and on opening it a quantity of clear fluid escaped. I now slit up the sac and ascertained that it was a former hernial sac, whose neck had been obliterated or closed by the pressure of the truss after the hernia had been returned into the abdomen, as pointed out by Mr. Lawrence. I next exposed the true hernial sac, and on opening it a quantity of reddish straw-colored fluid escaped; the sacculated appearance of the intestine with the *appendices epiploicæ* attached, left no doubt that the contents of the hernial sac were a portion of the colon. I now divided the sac up as high as the external ring. The fascia was firmly banded over the intestine, and cringed on being divided with the bistoury. On attempting to introduce the tip of the index finger into the external abdominal ring, I found it almost impossible to do so in consequence of the extreme tightness existing at the apex of the ring, which appeared to be tense, hard, and thickened. Using the tip of my finger as a director, I divided the stricture, which audibly snapped; I now endeavored to return the intestine, but could not conveniently do so, without making unjustifiable pressure. I accordingly introduced my finger into the inguinal canal and slit up to a sufficient extent the *aponeurosis* of the external oblique, to allow the easy return of the intestine. Having finished the operation, the patient was carried to bed and put on the treatment already described. In reference to this case, Sir Astley Cooper's advice, I think, could not be put in practice. If the fascia was left undivided an inch from the abdominal ring, the hernia could not be returned, and further, that the stricture could not be divided external to the neck of the sac, I am satisfied Richter was right, when he asserted that he could not do so.

The patient alluded to in the above case is now well. Does not his case prove the soundness of the theory and practice I have inculcated in every particular? I have to further add a practical and very important remark; when the patient is kept steadily under the influence of opium, on the morning of the fifth day, he will burst into a copious warm perspiration (this circumstance I noted particularly in the last two cases). A vast amount of anxiety is now removed, as the perspiration shows conclusively no inflammation is present, and further, that a purgative may be safely administered, as well as that the patient need be no longer kept on starvation regimen.

In passing I must observe, the operation of opium is well worthy of the attention of ovariotomists. There is a great analogy between the operation of hernia and ovariotomy; the same after treatment is applicable in each case; therefore (although hereto-

fore strongly opposed to ovariotomy), I would not now hesitate to perform the operation in a suitable case.*

I cannot avoid remarking in connexion with this subject, that obstetricians, in cases of rupture of the uterus, may cheer up the drooping spirits of their imploring and interesting patients, by an assurance of comparative safety, provided they rely on, and have recourse to, opium in the way directed.

Lastly, under this heading, I wish I could impress the army surgeons with the necessity of thoroughly understanding the utility and salutary operation of opium. I am satisfied such a desideratum would be attended with the preservation of thousands of lives and limbs of the gallant, brave, and noble defenders of the laws and constitution of the generous, hospitable, and glorious United States.

In conclusion, I would most earnestly inculcate the necessity of every medical practitioner studying and making himself perfectly familiar with the symptoms of hernia, as a mistake in the diagnosis of a case of hernia is often attended with fatal consequences to the patient, and must prove detrimental and injurious to the character of the man who makes it. The absolute and imperative necessity of every surgeon making himself thoroughly acquainted with the anatomy of hernia is too apparent to require to be enforced, and is thoroughly insisted upon by all Professors of Surgery and Anatomy.

There are some particulars connected with the operation of strangulated hernia to which I have not adverted, but as the works of Sir Astley Cooper and Mr. Lawrence are accessible to all, and are so full and explicit, there appears to be no necessity to refer to them. It is further to be remarked, my observations are intended for the consideration of the junior members of the profession, and not with a view of enlightening the seniors, who are practically conversant with operative surgery in its most brilliant aspects. It need scarcely be mentioned in addition, that I am most anxious to demonstrate the necessity of treating strangulated hernia on sound and true physiological principles, the only solid foundation on which a physician or surgeon can aspire to eminence in the treatment of disease. It must be conceded, to be a good physiologist, implies being a good anatomist, and a student possessed of these requirements must become an expert pathologist.

Mr. President and Gentlemen:—The triumphs of operative surgery, as witnessed in cases of strangulated hernia, as well as the stupendous, marvellous, and daring surgical achievements, first contemplated, designed, and carried into operation by the highly esteemed and illustrious Professor Mott, are such as to win the admiration, esteem, and gratitude of mankind, and demonstrate

* Mr. Erichsen recommends opium and non-purgation for several days after the operation of ovariotomy.

in the clearest manner the superiority of properly educated men over the various and numerous grades of charlatans who assume the title of Doctor, only to pollute and degrade the honorable and learned profession of physician, who trade in the folly, simplicity, ignorance, and credulity of the people, and luxuriate in splendor on the superfluous cash of the weak-minded and self-opinionated wealthy, as well as the hard-earned pittance of the benighted poor, who become magnetized by their pharisaical protestations of piety and uprightness, and thus become an easy prey to be grasped by their remorseless and greedy clutches. How applicable, how appropriate, the characteristic description and scathing denunciation of the poet, when applied to a quack.

"Hic niger est, hunc tu, Romane, caveto."